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ABSTRACT

This study examined the effects of four characteristics of instructional objectives presented to the student prior to reading, upon intentional and incidental learning. The most salient result was produced by providing instructional objectives to the student prior to the text. The main findings were that (a) density increases (Proportion of intentional to total sentences) resulted in a reduction of intentional learning but did not affect incidental learning; and (b) specifically stated objectives produced more intentional learning than did general objectives. Incidental learning was influenced by density and specificity of directions. This suggests that presentation of objectives will not interfere with incidental learning. (Author)

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The Effect of Presenting Objectives Prior to Text

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This study examined the effects of four characteristics of instructional objectives presented to the student prior to reading, upon intentional and incidental learning. The most salient result was produced by providing instructional objectives to S prior to the text. The main findings were that (a) density increases (proportion of intentional to total sentences) resulted in a reduction of intentional learning but did not affect incidental learning; and (b) specifically stated objectives produced more intentional learning than general objectives. Incidental learning was influenced by density and specificity of directions. This suggests that presentation of objectives will not interfere with incidental learning.

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The Effect of Presenting Instructional Objectives Prior to Reading

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Providing explicitly stated objectives to students prior to instruction has been shown to increase the effectiveness of training (Mager & McCann). Supplying students with objectives in this way is analogous to the use of directions in Type II incidental learning studies. In these studies, intentional learning is defined in terms of the materials that are relevant to directions that have been given to S prior to training.

The purpose of this study was to examine the effects of four parameters, associated with presenting objectives prior to a text, upon intentional and incidental learning. The two major experimental factors were (1) specificity in the description of instructional objectives (i.e., in the phrasing of directions to the student concerning what he was to learn), and (2) density of relevant sentences in the text. A relevant sentence was empirically determined to be relevant to one of the objectives. Density was the ratio of relevant sentences to the total number of sentences in the text. The effects of these two factors on intentional and incidental learning were explored in a factorial experiment.

Method: Three experimental passages were selected; they were 842, 1091, and 1120 words in length and composed of 60, 56, and 55 sentences, respectively. A set of specific objectives and a set of general objectives were prepared for each passage. Each objective consisted of a single sentence or phrase describing a learning goal. A specific objective was written to be relevant to exactly one sentence in the text. Each general objective was relevant to a group of from two to five sentences. Three density levels were achieved for each passage: 20%, 40%, and 60%. Fill-in-the-blank test questions were constructed for each sentence relevant to an objective by removing one substantive word from each sentence and substituting for it a line of uniform length. In addition, similarly constructed test questions were developed for most of the remaining sentences which were not relevant to any objective; these became incidental test items.

A 3x2x3x2 factorial design was used. The factors were: (1) three passages, (2) two levels of objectives (Specific, General), (3) three levels of density (20, 40, and 60 per cent) and (4) two kinds of learned performance (intentional vs. incidental), with repeated measures on the same Ss for this last factor. One additional reference treatment was used for each passage. This reference group studied the experimental text with very broad directions to learn "everything" in the text. This treatment corresponds to the unstructured direction usually employed in learning experiments and classrooms.

Subjects: Paid volunteers from three New Jersey high schools--Scotch Plains-Fanwood, New Providence and Summit--participated in the experiment. They consisted of 206 males and 275 females (N=448) ranging from 14 to 19 years of age. The experiment was conducted at each high school shortly after the last school period.

Results: A first analysis considered test items which were: (1) derived from sentences which were intentional to all experimental conditions and (2) derived from sentences which were incidental for all experimental conditions. The results showed that: (1) Intentional learning was greater than incidental. (2) Specific objectives resulted in higher performance than general objectives for intentional items. Specificity of direction had little or no effect on incidental learning. (3) Increases in density were accompanied by decreases in the proportion of intentional items that were correctly recalled. There were no measurable effects of density on incidental learning. (4) As was expected, performance on common intentional items was substantially higher in the experimental group than in the reference group which had no objectives. More interesting was the finding that the experimental treatments also resulted in higher performance on common incidental items than the reference condition (no objectives).

A second analysis considered all test items. Therefore, this analysis was for the actual number of correct intentional and incidental items. The first analysis indicated that the lower density of instructional objectives in the text resulted in greater likelihood that any given intentional item would be correctly answered. This does not mean, however, that the total test performance for high density treatments will be less than for lower densities. This is because high density treatments have a higher number of objective-relevant items in the text than the low density treatments. The results of the second analysis showed that specific objectives resulted in higher performance than general objectives. Density 60 resulted in significantly higher total performance than Density 40, which in turn produced significantly higher total test scores than Density 20. This occurred because a larger proportion of the total number of objectives were inspected under the intentional condition in the higher density treatments.

Discussion: The most salient result of the experiment was the large effects on learning produced by providing instructional objectives to S prior to exposure to the text. The present findings serve to draw further attention to the usefulness of a simple technical practice for the schools. The main substantive findings of this experiment were that (a) density increases resulted in reduction of proportion of intentional learning but did not affect incidental learning; and (b) specifically stated objectives produce more intentional learning than more general objectives. Incidental learning is not influenced by density and specificity of directions. This suggests that carefully specified instructional objectives will not interfere with the serendipitous discovery of information not directly relevant to instruction. This finding is reassuring because serendipity in education should be a concern among education technologists.